9. *New Species of Hydrozoa from South Africa.**—By N. A. H. Millard, Department of Zoology, University of Cape Town. (With three text-figures.)

Introduction

The species described were collected by members of the Zoology Department during the course of an ecological survey of the estuaries and shallow coastal waters of South Africa. The survey has received financial support from the Carnegie Corporation, the South African Council for Scientific and Industrial Research, the Staff Research Fund of the University of Cape Town, and the Natal Provincial Council. Specimens bearing the reference letters FAL were collected from False Bay, Cape, by Mr. J. C. Morgans, who is investigating the bottom fauna of this area by diving and by dredging.

Fam. Hydractinidae

Hydractinia altispina n. sp.

Fig. 1

Description. Colonies living on the shell of the gastropod *Thais* (*Purpura*) *squamosa*. Hydrorhiza covered with a layer of free coenosarc, from which the zooids arise direct. Spines long, smooth, hollow and horn-coloured.

Gastrozooids creamy-white in colour with a pink area below origin of tentacles, in preserved specimens short and fat, generally shorter than the spines. Tentacles 5–12 in number, but usually 6 or 8, with long and short ones alternating, about four times the length of manubrium in living specimens, short and lumpy when preserved. Several bifurcating tentacles observed. No spiral zooids or tentacular filaments.

Gonozooids much smaller than gastrozooids, with mouth and 3–5 very short tentacles. Sporosacs borne on short stalks below tentacles and near base of gonozooid, male and female on separate colonies. Male sporosacs spherical, with width slightly exceeding length; with four radial canals and a circular

* The South African Museum collection of Hydrozoa consists mainly of the material collected many years ago by the Cape Government trawler s.s. *Pieter Faure*. Samples from this collection were submitted to an overseas specialist, who for various reasons was prevented from reporting on them. The collection has now been submitted to Dr. Millard who will study it in conjunction with the collection made in recent years by the Zoology Department of the University of Cape Town. This is Dr. Millard's first report on these collections. [Ed.]

one; containing four groups of spermatogenic cells arranged around a central spadix, which is solid except just at the base; no sign of tentacles. Female sporosacs oval; with four radial canals and a circular one; containing approximately 32 eggs (about 8 eggs visible in transverse section, about 4 on each side in longitudinal section), arranged around a central, hollow spadix.

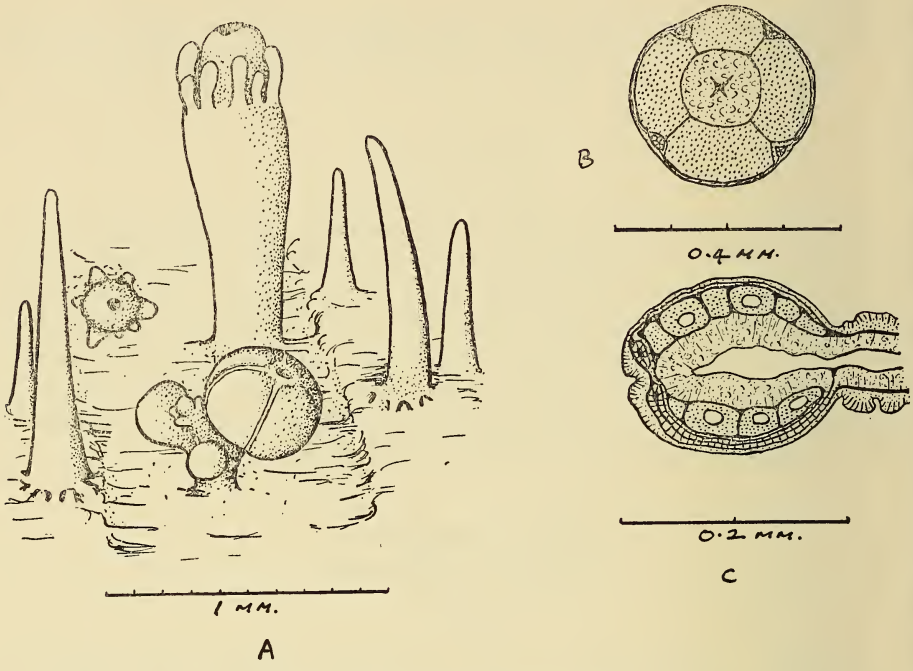

Fig. 1. *Hydractinia altispina* n. sp.

A. Portion of preserved colony on shell of host, showing an extra large gastrozooid, a small gastrozooid, a male gonozooid and a number of spines.
B. Transverse section of male sporosac, showing the 4 groups of spermatogenic cells surrounding the spadix, and the 4 radial canals.
C. Longitudinal section of female sporosac, passing through a radial canal on one side.

Measurements. Spines reaching 0·98 mm. in length. Gastrozooids reaching 4 mm. in length to origin of tentacles when expanded, up to 1·03 mm. preserved.

Gonozooids reaching 0·44 mm. in length to origin of tentacles (preserved).

Male sporosacs, max. length 0·42 mm., max. width 0·51 mm.

Female sporosacs, max. length 0·46 mm., max. width 0·36 mm.

Cotypes in Zoology Department, University of Cape Town, nos. F 274, CP 258, B 92, FAL 7 Z. CP 258 also in S.A. Museum.

Localities. St. James (intertidal), Lambert's Bay (intertidal), False Bay (dredged from 24 metres).

Remarks. This species possibly includes the specimens from South West Africa described by Broch, 1914, as *Hydractinia* sp. The size of the spines and gastrozooids, and the number of tentacles on the latter, are within range, but the name of the host-snail was not given and no gonozooids were described. Apart from this, only two species of *Hydractinia* have previously been recorded from South Africa. Of these *H. pacifica* Hartlaub 1905 is without spines, and *H. parvispina* Hartlaub 1905 has very short spines.

Ripe sporosacs have been found in March, July and August, and sterile colonies in February and April.

The host-snail, *Thais squamosa*, typically inhabits the lower parts of the intertidal area in the Cape Province, and is also brought up occasionally in dredgings in False Bay.

Hydractinia kaffraria, n. sp.

Fig. 2

Description. Colonies living on shell of *Nassarius kraussianus*. Hydrorhiza covered with a layer of free coenosarc. Zooids arising direct from hydrorhiza. No spines.

Gastrozooids with 8–15 tentacles arranged in two close-set, alternating verticils. Manubrium conical when contracted, generally club-shaped when expanded.

No spiral zooids at lip of shell, but a few tentacular filaments sparsely and irregularly scattered amongst the zooids.

Gonozooids smaller than gastrozooids, with 5–12 tentacles arranged in two close-set, alternating verticils. Mouth apparently present, though very small. Sporosacs spherical, borne immediately below tentacles, each on a short stalk, male and female on separate colonies. Male sporosac with four radial canals and a circular, and with indications of a velum and rudimentary tentacles on inner edge of umbrella margin. Female sporosac with four radial canals and a circular, containing 21–32 ova arranged around a central spadix.

Measurements (preserved). Tentacular filaments up to 3·0 mm. long.

Gastrozooids reaching 2·0 mm. in length to origin of tentacles.

Gonozooids reaching 1·1 mm. in length to origin of tentacles, usually about 0·7 mm. Stalk of sporosac about 0·05 mm. long.

Male sporosac reaching 0·55 mm. in length by 0·50 mm. in diameter.

Female sporosac reaching 0·45 mm. in length by 0·40 mm. in diameter.

Cotypes in Zoology Department, University of Cape Town, nos. BRE 111 A, female colony, from the Breede River Estuary; HAM 3 Q, male and female colonies, from the Keiskamma River Estuary. Paratype SUN 3 N in S.A. Museum.

Localities. Breede River Estuary, Knysna Estuary, Sunday's River Estuary, Kleinmond Estuary (Bathurst Division), Bushman's River Estuary, Keiskamma River Estuary, Durban Bay.

Remarks. This species was recorded by Day, Millard and Harrison (1952) from Knysna Estuary as *Hydractinia* sp. It is closely related to *H. pacifica* Hartlaub, which species, however, has no radial canals and only one ovum in the female sporosac. It is also close to *H. parvispina* Hartlaub, from which it differs in the absence of spines.

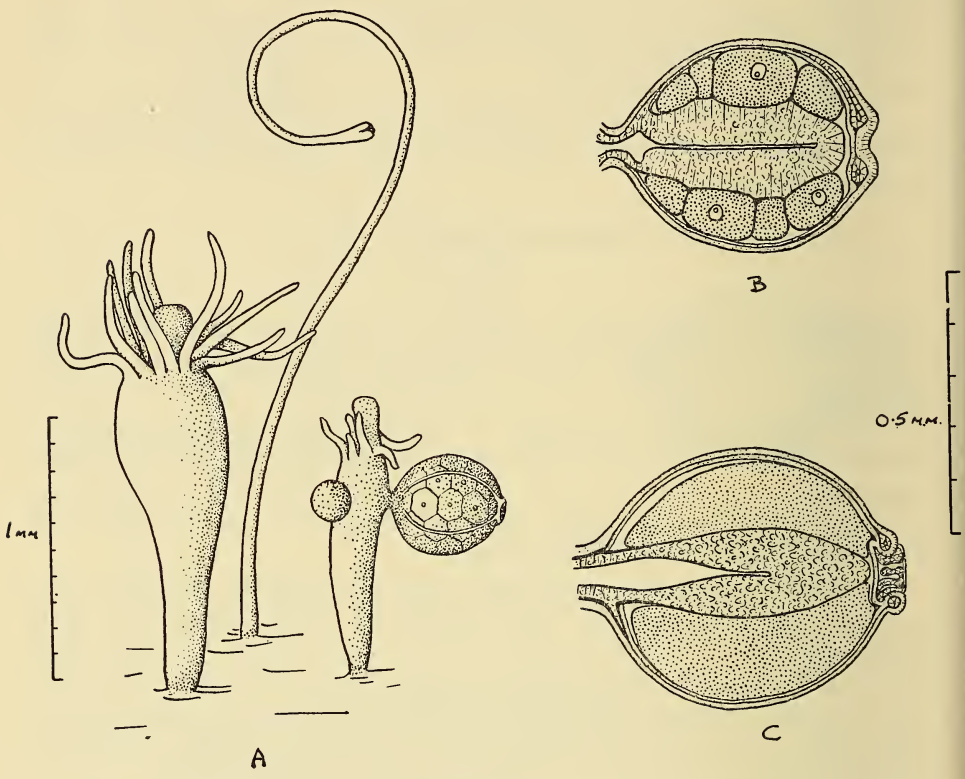

Fig. 2. *Hydractinia kaffraria* n. sp.
A. Three individuals of a colony: gastrozooid, tentacular filament and female gonozooid bearing sporosacs.
B. Longitudinal section of female sporosac.
C. Longitudinal section of male sporosac.

Ripe sporosacs have been found in January, February, July and September. Since no empty sporosacs have been observed there is a possibility that these structures have a short free-living existence before the discharge of the sexual products.

The host snail, *Nassarius kraussianus*, is common in the *Zostera* beds of the estuaries of the Cape Province and Natal. The hydroid has its centre of distribution in the Transkei area of the Cape Province, extending as far north as Durban on the east coast and as far west as the Breede River on the south coast.

Fam. Lafoeidae

Zygophylax cornucopia n. sp.

Fig. 3

Description. Hydrorhiza creeping on the posterior surface of the stem of *Antenella africana* Broch, divided irregularly by slightly oblique nodes.

Colony stolonial, with hydrothecae arising directly from the hydrorhiza, each on a short stem. Stems directed alternately to right and left, forming two rows more or less at right angles to one another. Stems also directed upwards forming an angle of roughly 45° with the hydrorhiza. Stem borne on apophysis

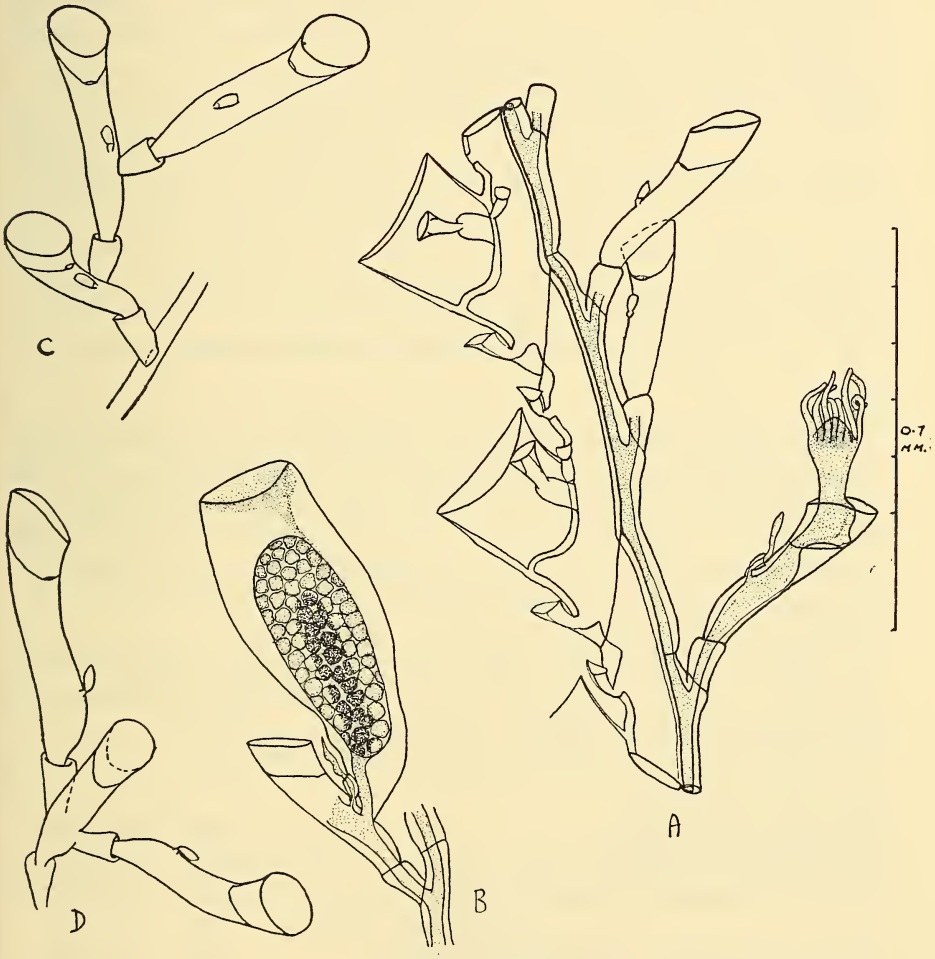

Fig. 3. *Zygophylax cornucopia* n. sp.
A. Normal colony growing on *Antenella africana.*
B. A single hydrotheca with female gonotheca.
C and D. Two forms of branching which occur in the paratype FAL 217 N.

of hydrorhiza, and consisting usually of one basal segment and a hydrothecal pedicel which is not sharply demarcated from the hydrotheca. Sometimes there is no node separating the basal segment from the apophysis. Apophysis and basal segment devoid of nematothecae.

Pedicel and hydrotheca together forming a cornucopia-shaped figure, curving evenly outwards and then upwards, widening towards mouth. Pedicel more than twice length of hydrotheca, and bearing one nematotheca about half-way along its adcauline side. Nematotheca barrel-shaped, slightly longer on side away from pedicel, mounted on short stalk.

Hydrotheca bilaterally symmetrical, aperture oval and facing upwards, margin smooth and more or less perpendicular to hydrorhiza. Diaphragm oblique and bilaterally symmetrical, sloping downwards and inwards towards its aperture which is on the adcauline side.

Hydranth with abcauline blind pouch, conical proboscis and about 18 tentacles. Can be completely retracted into hydrotheca.

Gonothecae not aggregated into coppinia, but borne singly upon hydrothecal pedicels, at more or less the same level as nematothecae. Female gonotheca long and slender, with no distinct stalk, tapering at proximal end to its attachment, truncated at distal end, oval in section. Containing numerous eggs arranged in a mass around a central blastostyle, which extends for about $\frac{3}{4}$ length. Male gonotheca similar in shape but slightly shorter, containing a dense mass of spermatogenic cells. Male and female on separate hosts.

Notes

In one of the paratypes (FAL 217 N), in addition to the normal form, some branching individuals occur, in which secondary stems (including basal segment, pedicel and hydrotheca) may arise from a primary one. The secondary stems arise from the sides of the primary hydrothecal pedicel at about the same level as the nematotheca. As many as 3 secondary stems have been seen to arise from one primary in this way, or a primary stem may give rise to a secondary, and this to a tertiary.

In another paratype (FAL 78 S) an additional very short segment is occasionally interpolated between the normal basal segment of the stem and the apophysis of the hydrorhiza.

Gonophores have been found in June, August and December.

Measurements (Holotype)

Diameter of hydrorhiza:	0·03 — 0·05 mm.
Length of basal segment:	0·06 — 0·12 mm.
Length of hydrothecal pedicel, abcauline:	0·22 — 0·29 mm.
„ „ „ „ to diaphragm aperture:	0·18 — 0·25 mm.
Length of hydrotheca, abcauline:	0·06 — 0·10 mm.
„ „ „ adcauline:	0·05 — 0·09 mm.
Max. width of hydrotheca, at margin:	0·10 — 0·13 mm.
„ „ „ „ at diaphragm aperture:	0·06 — 0·08 mm.

Length of nematotheca plus stalk:	0·05 — 0·06 mm.
Female gonotheca, length:	0·50 — 0·83 mm.
,, ,, max. width:	0·14 — 0·29 mm.
Male gonotheca, length:	0·49 — 0·56 mm.
,, ,, max. width:	0·18 — 0·24 mm.

In the paratypes some of the measurements show a slightly larger variation, as follows:

Length of hydrothecal pedicel, abcauline:	0·20 — 0·29 mm.
,, ,, ,, ,, to diaphragm aperture:	0·15 — 0·25 mm.
Length of hydrotheca, abcauline:	0·06 — 0·12 mm.
Max. width of hydrotheca, at margin:	0·10 — 0·15 mm.
Length of nematotheca plus stalk:	0·03 — 0·06 mm.

Holotype in Zoology Department, University of Cape Town, no. FB 131 B, from dredgings in False Bay, at 5–8 metres. Numerous colonies on *Antenella africana*, some bearing gonophores.

Paratypes: TB 1 B, FAL 78 S, FAL 169 X, FAL 217 N, in Zoology Department; FAL 78 S also in S.A. Museum.

Localities. False Bay, from 4 to 18 metres. Table Bay, from 19 to 20 metres.

Remarks. *Zygophylax cornucopia* differs from other members of the genus in the stolonial nature of the colony, absence of coppinia, position of nematophores, length of hydrothecal pedicel and asymmetry of diaphragm.

It is included in the genus *Zygophylax* for the following reasons. Levinsen, 1913, maintained that among the hydroids the arrangement of the hydrothecae in the colony is not a good diagnostic character. In the genus *Zygophylax* this is borne out by the fact that in *Z. valdiviae* Stechow 1923 a, hydrothecae may arise either from upright stems (which are unfascicled) or direct from the hydrorhiza.

Further, Levinsen and also Broch, 1918, maintain that the presence of coppinia in the *Lafoeidae* is not a generic character. They are present, for instance, in some species of *Lafoea* and not in others. Totton, 1930, has pointed out that although coppinia are present in *Z. sibogae* Billard 1918, some of the gonothecae arise separately.

In shape the hydrotheca and its pedicel resemble most those of *Z. sibogae* Billard 1918, where also the double curvature is apparent and the hydrothecal pedicel is long.

Z. africana Stechow 1923 b is the only other species so far reported from South Africa. No reproductive structures were described, but otherwise it differs from *Z. cornucopia* in the features listed above.

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